[0017] and the beam part is a remainder after subtracting the through-hole from the main body part in the predetermined region, is a part that cuts the cell aggregates to be divided, and is integrally connected to form a network.

[0018] [2] The device according to [1], wherein the opening shape of the through-hole has an opening area with an equivalent-circle-diameter of 40 μm-90 μm, and a shape accommodating a circle with a diameter of 35 μm-85 μm.

[0019] [3] The device according to [1] or [2], wherein the beam part has a width of 10 μm-60 μm that is a separation distance between adjacent through-holes.

[0020] [4] The device according to any of [1] to [3], wherein said many through-holes have opening shapes of quadrangles congruent with each other, and said beam parts are connected to each other in an orthogonal lattice pattern.

[0021] [5] The device according to any of [1] to [3], wherein said many through-holes have opening shapes of hexagons congruent with each other, and said beam parts are connected to each other in a honeycomb-shape.

[0022] [6] The device according to [5], wherein the hexagon is a regular hexagon, and, among the six sides of the regular hexagon, a distance between two parallel sides facing each other is 38 μm-85 μm.

[0023] [7] The device according to any of [1] to [6], wherein

[0024] the aforementioned film surface is a first film surface, a film surface on the opposite side thereof is a second film surface,

[0025] when in use of the device, the first film surface is a surface used as an inlet side, the second film surface is a surface used as an outlet side, and

[0026] a cross-sectional shape in the perpendicular longitudinal direction of the aforementioned beam part is a rectangle, or two corners on the inlet side of the rectangle have a round shape.

[0027] [8] The device according to any of [1] to [7], wherein the cell aggregate to be divided is a cell aggregate composed of pluripotent stem cells.

[0028] [9] A method for dividing a cell aggregate, comprising a step of dividing a cell aggregate to be divided by passing, using the device of any of the above-mentioned [1] to [8], the cell aggregate together with a liquid through the mesh structure of the aforementioned device.

[0029] [10] The method according to [9], wherein the flow velocity of the liquid is 10 mm/sec-500 mm/sec when the cell aggregate to be divided passes through the net-like region in the aforementioned device together with a liquid.

[0030] [11] The method according to [9] or [10], further comprising a backflow washing step of passing, after division of a predetermined amount of the cell aggregates in the aforementioned step of dividing the cell aggregate, a predetermined liquid through the mesh structure in the direction opposite to the direction of passage of the cell aggregate through the mesh structure of the device for division, thereby washing the mesh structure.

Advantageous Effects of Invention

[0031] In the device of the present invention (hereinafter to be referred to as the device), a large number of through-holes are arranged on the film surface, and a predetermined region (a part or all of the region) of the film surface has a mesh structure. This mesh structure is a kind of porous film composed of through-holes that function as mesh-holes and beam parts that function as partition parts between adjacent through-holes. In the region of this mesh structure, as shown in FIG. **1**(*a*), the beam part **20** is two-dimensionally connected as a net as the remainder of the film excluding the through-holes, and there is no waviness of mesh wires. Therefore, the cell aggregate that collides with such a beam part free of waving can be more preferably divided than the wavy mesh wires described above. Furthermore, as shown in FIG. **1**(*b*) or FIG. **1**(*c*), the cross-sectional shape of the beam part **20** is not a circle but close to a quadrangle or a rectangle (rectangle with long side in thickness direction, rectangle with short side in thickness direction, or square). Therefore, the edge of the beam part **20** at the opening of each through-hole can divide the cell aggregate sharply without resistance, and thus the damage to the cell aggregate at the time of cutting may be smaller in some cases.

[0032] When dividing cell aggregates by using the device, therefore, the flow velocity of the liquid passing through the net-like region (such as a liquid medium in which the cell aggregates to be divided are dispersed) can be made lower than in the case of division using a conventional mesh, and crushing of the cell aggregate into excessively fine cell aggregates can also be suppressed.

[0033] In a preferred embodiment of the device, the opening shape of the through-hole is a shape closer to a circle (e.g., square or equilateral hexagon), and the width of the beam part is uniform. As a result, the damage to the cell aggregate at the time of cutting is smaller, and a sphere-shaped preferable cell aggregate having a uniform size can be obtained.

[0034] In the device, it is relatively easy in processing to narrow the width of the beam part. When the opening shape is a regular hexagon, the strength of the entire mesh structure is high, and the width of the beam part can be further narrowed. Since the cell aggregate can be further divided without resistance and the aperture ratio (the ratio of the opening to the total area of the mesh structure region) can be increased, the above-mentioned problem of mesh can be solved.

BRIEF DESCRIPTION OF DRAWINGS

[0035] FIG. **1** shows an example of a preferred embodiment of the mesh structure in the device of the present invention. FIG. **1**(*a*) is a partially enlarged view of a predetermined region of the film surface of the film-like main body part, and FIG. **1**(*b*) is a cross-sectional view taken along the line X**1**-X**1** of FIG. **1**(*a*). FIG. **1**(*c*)-(*e*) show other embodiment of the cross section of the beam part shown in FIG. **1**(*b*). In FIG. **1**(*b*)-(*e*), the cross section of the beam part is hatched.

[0036] FIG. **2** illustrates the region where the mesh structure is provided on the film surface of the main body part of the device of the present invention. In this Figure, the opening of the through-hole is not shown, and the area where the mesh structure is provided is shown by hatching.

[0037] FIG. **3** shows other example of a preferred embodiment of the mesh structure in the device of the present invention, and is a partially enlarged view of a predetermined region of the film surface of the main body part.

[0038] FIG. **4** is a cross-sectional view showing one embodiment of the structure of a device holder configured so that the device of the present invention can be preferably used for dividing a cell aggregate.